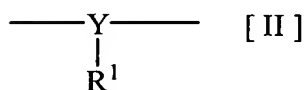
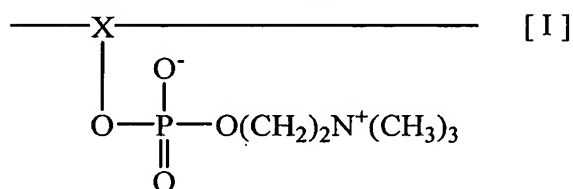


CLAIMS

1. An agent for fixing (a) substance(s), comprising a water-soluble polymer used for fixing a desired substance on a substrate, which water-soluble polymer has at least two photoreactive groups in one molecule, said molecule of said water-soluble polymer being electrically neutral as a whole.

2. The agent for fixing (a) substance(s) according to claim 1, comprising a unit having the structure represented by the following general formula [I] and a unit having the structure represented by the following general formula [II]:



(wherein in general formulae [I] and [II], X and Y independently represent a polymerizable atomic group in the polymerized state, R^1 represents an atomic group having said photoreactive group, not less than 2 units represented by the general formula [I] and not less than 2 units represented by the general formula [II] are contained, and the number of the units represented by the general formula [I] is larger than the number of the units represented by the general formula [II].)

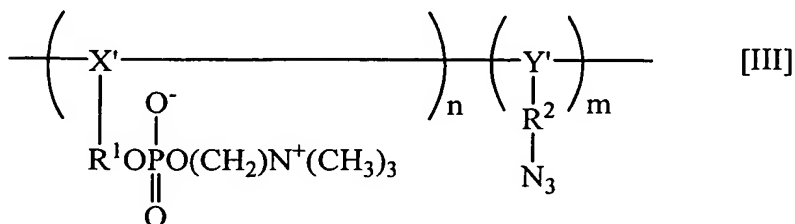
3. The agent for fixing (a) substance(s) according to claim 1 or 2, wherein said photoreactive group is azide group.

4. The agent for fixing (a) substance(s) according to claim 2 or 3, wherein the ratio of the number of said units represented by the general formula [I] to the number of said units represented by the general formula [II] is 100:2 to 100:50.

5. The agent for fixing (a) substance(s) according to any one of claims 1 to 4, wherein said polymer has a molecular weight of 1000 to 1,000,000.

6. The agent for fixing (a) substance(s) according to any one of claims 1 to 5, wherein said X and Y are derived from vinyl monomers.

7. The agent for fixing (a) substance(s) according to any one of claims 1 to 3, which is represented by the following general formula [III]:

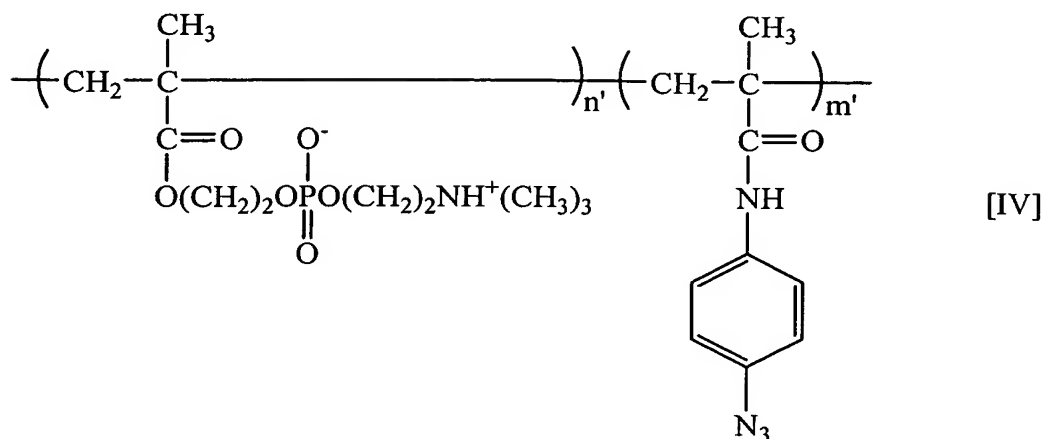


(wherein X' and Y' independently represent methacryloxy, methacrylamide, acryloxy, acrylamide, styryloxy or styrylamide group, in the state in which the vinyl moiety thereof is addition-polymerized; R¹ represents a single bond or C₁-C₁₀ alkylene (with the proviso that it may be substituted with 1 or 2 hydroxyl groups), R² represents a single bond or C₁-C₁₀ alkylene (with the proviso that it may be substituted with 1 or 2 hydroxyl groups) or phenylene group (with the proviso that it may be substituted with 1 to 3 substituents selected from C₁-C₄ alkyl and hydroxyl groups); n and m independently represent integers of not less than 2, and n is larger than m; the units containing X' and the units containing Y' are bound in a random order).

8. The agent for fixing (a) substance(s) according to claim 7, wherein said unit containing X' is derived from 2-methacryloyloxyethylphosphorylcholine, 2-acryloyloxyethylphosphorylcholine, N-(2-methacrylamide)ethylphosphorylcholine, 4-methacryloyloxybutylphosphorylcholine, 6-methacryloyloxyhexylphosphorylcholine, 10-methacryloyloxydecylphosphorylcholine, ω-methacryloyldioxyethylenephosphorylcholine or 4-styryloxybutylphosphorylcholine.

9. The agent for fixing (a) substance(s) according to claim 8, wherein said unit represented by the general formula [I] is derived from 2-methacryloyloxyethylphosphorylcholine.

10. The agent for fixing (a) substance(s) according to claim 9, which is represented by the following formula [IV]:



(wherein n' represents an integer of 50 to 200, m' represents an integer of 5 to 40, and the phosphorylcholine-containing units and the azidephenyl group-containing units are bound in a random order).

11. The agent for fixing (a) substance(s) according to any one of claims 1 to 10, wherein said substance to be fixed on said substrate is selected from the group consisting of polypeptides, nucleic acids, lipids and cells and constituents of the cells.

12. A method for fixing (a) substance(s) on a substrate, comprising coating said substrate with an aqueous solution or an aqueous suspension containing said substance(s) to be fixed on said substrate and said agent for fixing (a) substance(s) according to any one of claims 1 to 11; and irradiating said solution or suspension with light.

13. The method according to claim 12, wherein said substance(s) to be fixed on said substrate is(are) selected from the group consisting of polypeptides, nucleic acids, lipids, cells and constituents of the cells.

14. The method according to claim 12 or 13, comprising selectively radiating said light so as to pattern the region to which said substance is fixed.

15. A substrate on which said substance(s) was(were) fixed by the method according to any one of claims 12 to 14.

16. The agent for fixing (a) substance(s) according to claim 1, wherein said water-soluble polymer is a nonionic water-soluble macromolecule having at least 2 photoreactive groups in one molecule.

17. The agent for fixing (a) substance(s) according to claim 16, wherein said nonionic water-soluble macromolecule is a polyalkylene glycol, polyvinyl macromolecule or a naturally occurring macromolecule.

18. The agent for fixing (a) substance(s) according to claim 17, wherein said polyalkylene glycol is polyethylene glycol, said polyvinyl macromolecule is poly((meth)acrylamide-photoreactive(meth)acrylamide) copolymer or poly(glycidyl(meth)acrylate-photoreactive(meth)acrylamide) copolymer.

19. The agent for fixing (a) substance(s) according to claim 18, wherein said nonionic water-soluble macromolecule is polyethylene glycol, poly(acrylamide-photoreactive acrylamide) copolymer or poly(glycidyl methacrylate-photoreactive acrylamide) copolymer.

20. The agent for fixing (a) substance(s) according to any one of claims 16 to 19, wherein said photoreactive group is phenyl azide group.

21. The agent for fixing (a) substance(s) according to any one of claims 16 to 20, wherein said nonionic water-soluble macromolecule has a molecular weight of 500 to 5,000,000.

22. The agent for fixing (a) substance(s) according to any one of claims 16 to 20, wherein said substance(s) to be fixed on said substrate is(are) selected from the group consisting of polypeptides, polysaccharides, nucleic acids, lipids, cells and constituents of the cells.

23. A method for fixing (a) substance(s) on a substrate, comprising coating said substrate with an aqueous solution or an aqueous suspension containing said substance(s) to be fixed on said substrate and said agent for fixing (a) substance(s) according to any one of claims 16 to 22; and irradiating said solution or suspension

with light.

24. The method according to claim 23, wherein said substance(s) to be fixed on said substrate is(are) selected from the group consisting of polypeptides, polysaccharides, nucleic acids, lipids and cells and constituents of the cells.

5 25. A substrate on which said substance(s) was(were) fixed by the method according to any one of claims 16 to 24.